

REMARKS

Claims 13 - 17 have been canceled by a prior amendment without prejudice or disclaimer of the subject matter thereof. Applicant reserves the right to pursue the subject matter of any of the canceled claims in the subject application and/or subsequently filed continuing applications.

Claims 1 - 4, 7, 12, 18 - 21 and 24 have been amended.

Claims 1 - 12 and 18 - 28 are present in the subject application.

In the Office Action of November 17, 2008, the Examiner has rejected claims 1, 12, and 18 under 35 U.S.C. §112, second paragraph, has rejected claims 1 - 2, 4 - 6, 18 - 19 and 21 - 23 under 35 U.S.C. §102(b), and has rejected claims 3, 7 - 12, 20 and 24 - 28 under 35 U.S.C. §103(a). Favorable reconsideration of the subject application and allowance of all of the pending claims are respectfully requested in view of the following remarks.

The Examiner has rejected claims 1, 12, and 18 under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner takes the position that the term “perceivable” to describe a user being able to tell a difference has occurred in the state of an application, and the term “current” for the operational state render the claims indefinite.

This rejection is respectfully traversed. However, in order to expedite prosecution of the subject application, independent claims 1, 12, and 18 have been amended to further clarify the features, and recite that each said application includes a plurality of operational stages, wherein each application state indicates the presence of differences between an operational stage of a corresponding activated application at a point when memory is evaluated for application removal and the operational stage of the corresponding application upon being unloaded from the

memory and reactivated. Accordingly, the claims are considered to further comply with 35 U.S.C. §112, second paragraph.

The Examiner has rejected claims 1, 2, 4 - 6, 18, 19 and 21 - 23 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,430,570 (Judge et al.). In addition, the Examiner has rejected claims 7, 8, 11, 24, 25 and 28 under 35 U.S.C. §103(a) as being unpatentable over the Judge et al. patent.

Briefly, the present invention embodiments are directed toward a system for managing memory. The system includes, among other things, a memory with logic and a processor configured with the logic to receive an indication of an application state from a plurality of applications in memory and determine which of the plurality of applications to effect removal from the memory based on the received indication. The application state contains information relating to whether a user experience with a corresponding application will be degraded if that application is unloaded from memory and reactivated. Applications with lesser impact on the user experience are removed from memory prior to other applications (e.g., See Abstract; and Paragraphs 0025, 0052, 0059 and 0073).

In other words, the present invention embodiments provide a removal scheme based on whether an application, upon reactivation, returns to the same or similar operating point occurring prior to the application being unloaded from memory (e.g., provides no significant impact on the user experience (before unloading and after reactivation)). Those applications that do return to the same or similar operating point after reactivation are removed from memory prior to the other applications.

The Examiner takes the position that the Judge et al. patent discloses the features within these claims.

This rejection is respectfully traversed. However, in order to expedite prosecution of the subject application, independent claims 1 and 18 have been amended and recite the features of: receiving an application state from each of a plurality of applications in memory, wherein each said application includes a plurality of operational stages, and wherein each application state indicates the presence of differences between an operational stage of a corresponding activated application at a point when memory is evaluated for application removal and the operational stage of the corresponding application upon being unloaded from the memory and reactivated; and determining which of the plurality of applications to effect removal from the memory based on the received application states, wherein an application with an application state indicating an absence of said differences between said activated and reactivated operational stages is removed from the memory before other applications with application states indicating the presence of said differences between said activated and reactivated operational stages.

The Judge et al. patent does not disclose, teach or suggest these features. Rather, the Judge et al. patent teaches an application manager for managing applications in an embedded device. The application manager allows remote control of loading, starting, stopping, unloading, and application state querying of applications on an embedded device. Applications are cached in an application cache resident within the embedded device even after application termination to allow for higher efficiency when applications must be unloaded to handle low or out-of memory conditions. The application manager may query application information including the

application execution state (e.g., initialized, executing or terminated) (e.g., See Abstract; Column 4, lines 55 - 59; and Column 7, lines 12 - 18). The application manager frees memory according to a priority based algorithm or list. For example, an additional unload priority field may be utilized to indicate the ranking of an application for unloading (e.g., See Column 5, lines 3 - 15; and Column 7, lines 39 - 45).

Thus, the Judge et al. patent teaches an application manager that frees memory according to a priority ranking for the applications (e.g., provided by the client). There is no disclosure, teaching or suggestion of removing applications based on the presence of differences between an operational stage of a corresponding activated application at a point when memory is evaluated for application removal and the operational stage of the corresponding application upon being unloaded from the memory and reactivated. In other words, the Judge et al. patent discloses a client providing a rank or priority for unloading applications, whereas the independent claims recite a removal scheme based on whether an application, upon reactivation, returns to the same or similar operating point occurring prior to the application unload. Those applications that do return to the same or similar operating point are removed from memory prior to the other applications.

Since the Judge et al. patent does not disclose, teach or suggest the features recited in independent claims 1 and 18 as discussed above, these independent claims are considered to be in condition for allowance.

Claims 2, 4 - 8, 11, 19, 21 - 25 and 28 depend, either directly or indirectly, from independent claims 1 or 18 and, therefore, include all the limitations of their parent claims.

Claims 2, 4, 7, 19 - 21, and 24 have been amended for further clarification and/or consistency with their amended parent claims. The dependent claims are considered to be in condition for allowance for substantially the same reasons discussed above in relation to their parent claims and for further limitations recited in the dependent claims.

The Examiner has rejected claims 3, 9, 10, 12, 20, 26 and 27 under 35 U.S.C. §103(a) as being unpatentable over the Judge et al. patent in view of Enterprise Java Beans Component Architecture: Designing and Coding Enterprise Applications (hereinafter referred to as the “EJB publication”).

Briefly, the present invention embodiments are directed toward a system for managing memory as described above.

The Examiner takes the position with respect to independent claim 12 that the Judge et al. patent discloses the claimed invention, except for the various states (e.g., stateless, stateful with and without state records, etc.) and removal sequence. The Examiner further alleges that the EJB publication discloses these features, and that it would have been obvious to combine the Judge et al. patent and EJB publication to attain the claimed invention.

This rejection is respectfully traversed. However, in order to expedite prosecution of the subject application, independent claim 12 has been amended and recites the features of: receiving an application state from each of a plurality of applications in memory, wherein each said application includes a plurality of operational stages, and wherein each application state indicates the presence of differences between an operational stage of a corresponding activated application at a point when memory is evaluated for application removal and the operational

stage of the corresponding application upon being unloaded from the memory and reactivated and, wherein said receiving an application state includes receiving at least one of a stateless state indicating the absence of said differences between said activated and reactivated operational stages and no significant ones of user perceivable differences between said activated and reactivated application, a stateful state with a state record indicating the absence of said differences between said activated and reactivated operational stages and no significant ones of said user perceivable differences between said activated and reactivated application, and a stateful state with no state record indicating the presence of said differences between said activated and reactivated operational stages and the presence of said user perceivable differences between said activated and reactivated application; and determining that an application with a stateless state is removed before an application with a stateful state with a state record, and that an application with a stateful state with a state record is removed before an application with a stateful state with no state record.

As discussed above, the Judge et al. patent teaches an application manager that frees memory according to a priority ranking for the applications (e.g., provided by the client). Accordingly, there is no disclosure, teaching or suggestion of removing applications based on the presence of differences between an operational stage of a corresponding activated application at a point when memory is evaluated for application removal and the operational stage of the corresponding application upon being unloaded from the memory and reactivated as recited in the independent claim.

The EJB publication does not compensate for the deficiencies of the Judge et al. patent. Rather, the EJB publication teaches server-side components that encapsulate an application's business logic for use by a client. A client that needs information calls business methods which may result in remote invocation (of a bean component) across a network (i.e., on the server; e.g., See Section entitled "2.4 Enterprise JavaBeans," first paragraph). These components include session beans that represent an interactive session with one or more clients, and maintain state, but only during the time a client interacts with the bean (e.g., See Section entitled "Session Beans"). A stateless session bean does not maintain client-specific data, while a stateful session bean stores client specific-data which is not saved at client termination (e.g., See Sub-Sections entitled "Stateless Session Beans" and "Stateful Session Beans").

Accordingly, there is no disclosure, teaching or suggestion of a scheme for unloading applications from memory or, for that matter, removing applications from memory based on the presence of differences between an operational stage of a corresponding activated application at a point when memory is evaluated for application removal and the operational stage of the corresponding application upon being unloaded from the memory and reactivation of that application as recited in the independent claim.

Since the Judge et al. patent and EJB publication do not disclose, teach or suggest, either alone or in combination, the features recited in independent claim 12 as discussed above, this claim is considered to be in condition for allowance.

Claims 3, 9, 10, 20 and 26 - 27 depend, either directly or indirectly, from independent claims 1 or 18 and, therefore, include all the limitations of their parent claims. Claims 3 and 20

have been amended for further clarification and/or consistency with their amended parent claims. As discussed above, the combination of the Judge et al. patent and EJB publication does not disclose, teach or suggest removing applications based on the presence of differences between an operational stage of a corresponding activated application at a point when memory is evaluated for application removal and the operational stage of the corresponding application upon being unloaded from the memory and reactivation of that application as recited in the claims. Accordingly, these claims are considered to be in condition for allowance.

In view of the foregoing, Applicant respectfully requests the Examiner to find the application to be in condition for allowance with claims 1 - 12 and 18 - 28. However, if for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is respectfully requested to call the undersigned attorney to discuss any unresolved issues and to expedite the disposition of the application.

Applicant hereby petitions for any extension of time that may be necessary to maintain the pendency of this application. The Commissioner is hereby authorized to charge payment of any additional fees required for the above-identified application or credit any overpayment to Deposit Account No. 05-0460.

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